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EXAMINER

FRONDA, CHRISTIAN L

ART UNIT PAPER NUMBER

1652

DATE MAILED: 08/12/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/914,006

Applicant(s)

EGGELING ET AL.

Examin r

Christian L Fronda

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

1. Claims 1-17 are under consideration in this Office Action.

Claim Rejections - 35 U.S.C. § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-13 are rejected under 35 USC 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-13, as written, do not sufficiently distinguish over nucleic acids, proteins, cells and antibodies as they exist naturally because the claims do not particularly point out any non-naturally occurring differences between the claimed products and the naturally occurring products. In the absence of the hand of man, the naturally occurring products are considered non-statutory subject matter. *See Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980). The claims should be amended to indicate the hand of the inventor, e.g., by insertion of "transformed microorganism" or "recombinant microorganism". See MPEP 2105.

Claim Rejections - 35 U.S.C. § 112, 1st Paragraph

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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Claims are directed to products and processes for the production of L-valine using any microorganism wherein the dihydroxy acid dehydratase activity, acetohydroxy acid synthase activity, isomeroreductase activity, and combinations thereof, are “reinforced”, increased, or “intensified”; or to processes for the production of L-valine using any microorganism wherein the threonine dehydratase activity, ketopantoate hydroxymethyl transferase, and pantothenate ligase activity, and combinations thereof are “weakened or eliminated”. Furthermore, the processes are directed to recited enzymes having any amino acid sequence and biological source and to any microorganism in which any enzyme involved in a metabolic pathway that reduces the formation of L-valine or involved in synthesis of D-pantothenate is “weakened or eliminated” (see claims 10, 12, 14).

However, the specification, however, only provides a written description for processes for the production of L-valine using the specific transformed *C. glutamicum* strains shown in Table 4, page 21, and in Examples 1-6. Furthermore, the specification provides a written description for dihydroxy acid dehydratase as SEQ ID NO: 2, ketopantoate hydroxymethyl transferase as SEQ ID NO: 4, and pantothenate ligase as SEQ ID NO: 5.

The specification does not provide a written description for the claimed products and processes for the production of L-valine using any microorganism wherein the dihydroxy acid dehydratase activity, acetohydroxy acid synthase activity, isomeroreductase activity, and combinations thereof, are “reinforced”, increased, or “intensified”; or to processes for the production of L-valine using any microorganism wherein the threonine dehydratase activity, ketopantoate hydroxymethyl transferase, and pantothenate ligase activity, and combinations thereof are “weakened or eliminated”

Thus, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

Claim Rejections - 35 U.S.C. § 112, 2nd Paragraph

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: transforming the microorganism, culturing the microorganism in the appropriate medium containing substrates for production of L-valine, and isolating the produced L-valine.

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8. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 2 the phrase "gene expression are reinforced in a microorganism" renders the claim vague and indefinite because the meaning of the phrase is not known and the specific genetic manipulation resulting in "reinforced" gene expression is not recited in the claim. Claim 3 which depends from claim 1 is also rejected because the claim does not correct the defect of claim 1.

In claims 4-13, the phrase "characterized in that" renders the claims vague and indefinite because it is not known if the limitations following the phrase are part of the claimed invention.

In claim 5, the phrase "mutation of the endogenous *ilvD* gene and/or of the *ilvBNC* genes serves to generate corresponding enzymes having increase activity" renders the claim vague and indefinite because the meaning of the phrase is not known, the specific mutation is not known or recited, and the specific enzymes are not known or recited.

In claim 6, the phrase "gene expression are intensified by increasing the number of genocopies" renders the claim vague and indefinite because the meaning of the phrase is not known.

Claim 7 is vague and indefinite since it is not known how incorporating the recited genes into a gene construct can increase the copy number of the recited genes.

Claim 10 is vague and indefinite because the specific enzyme claimed is not known and not recited and the meaning of the word "weakened" is not known.

Claims 11-13 are vague and indefinite because the specific genetic modification which results in a "weakened" enzyme is not known and not recited.

Claim 14 is vague and indefinite because the specific the specific enzyme claimed is not known and not recited and the meaning of the word "weakened" is not known.

Claims 15 and 16 are vague and indefinite because the specific genetic modification which results in a "weakened" enzyme is not known and not recited.

Claim 17 is vague and indefinite because the meaning of the phrase "characterized by *Corynebacterium glutamicum*" is not known.

Claim Rejections - 35 U.S.C. § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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10. Claims 1-4, 6-12, 14, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Reuter.

Reuter teach a overexpression of ilvBNCD in combination of a deletion of the ilvA in a microorganism, culturing of the microorganism, and subsequent production and accumulation of valine (see Abstract). Thus the reference teachings anticipate the claimed invention.

11. Claims 1,4, 6, and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Inui et al. (JP 08089249 A2).

Inui et al. teach the gene for dihydroxy acid dehydratase (ilvD), cloning the gene into an expression vector used for transforming coryneform bacteria, and using the transformed coryneform bacteria for manufacturing valine and isoleucine (see Abstract). Thus the reference teachings anticipate the claimed invention.

12. Claims 4, 6, and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al. (EP 356739).


Sato et al. teach the gene for acetohydroxy acid synthase (ilvBN), cloning the gene into an expression vector used for transforming coryneform bacteria, and using the transformed coryneform bacteria for manufacturing valine, isoleucine, or leucine (see entire patent). Thus the reference teachings anticipate the claimed invention.

Conclusion

13. No claims are allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian L. Fronda whose telephone number is (703)305-1252. The Examiner can be contacted Monday-Friday from 8:30AM - 5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (703)308-3804. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1600 receptionist whose telephone number is (703)308-0196.

CLF


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